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ABSTRACT

This pedagogical framework describes how the New York City Board of Education plans to improve education using information technologies. By providing advanced Internet services connecting students and their families, as well as teachers, schools staff, and the interested public, to a high-quality educational ISP/Portal, available to anyone at any place and any time, it can transform the conditions of educational work, in school and out. The Education Zone (edZone) will become the sum of the educational resources New York avails to its children, its educators, and citizens in general. This report presents an educational strategy for reaping the pedagogical benefits of this initiative, examining such topics as key elements in the technology initiative; raising educational achievement; the stakes of change; and three important changes (engagement, intelligence, and communication). It describes how the edZone will affect English language arts, social studies, mathematics, science, technology, the arts, languages other than English, career development and occupational studies, and health, physical education, and family and consumer sciences. Resources for each area are included. The report also discusses using the edZone in K-12, in college, and in school-to-work transitioning. (SM)

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A
Pedagogical
Framework

Prepared for

the
New York City
Board of Education
and its

Taskforce
on
Teaching
and
Learning
in
Cyberspace

Smart Cities: New York

Electronic Education for the New Millennium

Autumn, 2000

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A large on-line educational community can generate substantial revenue to sustain services to its members.

An Initiative to Support Teaching and Learning in Cyberspace

The New York City Board of Education is planning unprecedented initiatives using information technologies to improve education.

Through these initiatives, the Board seeks to make its huge scale, its proverbial weakness, the basis for its future strength.

Through its Taskforce on Teaching and Learning in Cyberspace, and a related feasibility study by Andersen Consulting, the Board has established the probability that the astute provision of Internet services can generate substantial resources, both for and through the educational use of digital technologies.

By providing advanced Internet services connecting all students and their families, as well as teachers, school staff, and the interested public, to a high-quality educational ISP/Portal, present to anyone at any place and any time, it can transform the conditions of educational work, in school and out.

An educational strategy for reaping the pedagogical benefits of this initiative follows.

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Engagement (8-19)
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edZone Practice (37-64)
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Civic Commitments (71-72)

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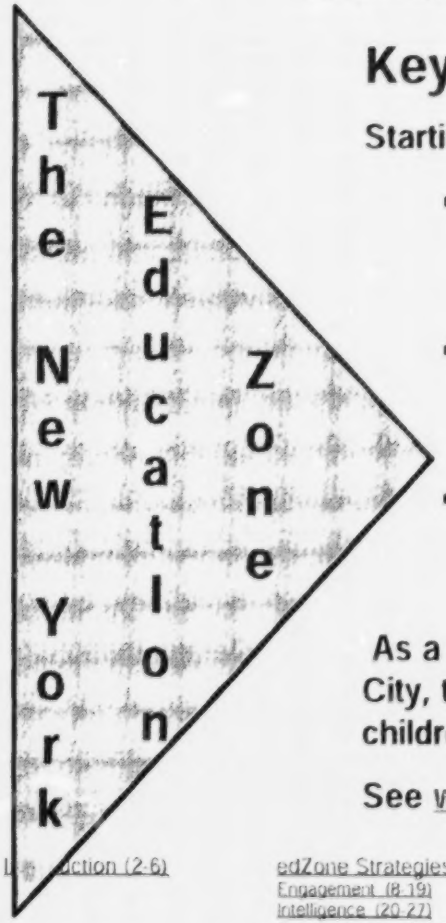
Cumulative Revenue

$2,800 M — $4,700 M



Key elements in the technology initiative

Starting with the 2001-2002 school year

- **All students, 4th grade and up, along with teachers and administrators, will rapidly receive digital devices for use in school and home.**
- **The Board will provide an ISP/Portal with an Education Zone for content, resources, and communication in support of educational work throughout New York City.**
- **These provisions will enable every child, every family, and every teacher to interact with resources in the Education Zone from any place at any time, in school and out.**

As a result, the Education Zone becomes the education program of the City, the sum of the educational resources New York avails to its children, to its educators, and to its citizens in general.

See www.nycenet.edu/cyberspace/ for the Andersen Consulting study.

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Raising the spectrum of educational achievement.

New conditions of teaching and learning make new patterns of accomplishment feasible.

- We know only past achievements, reached under past conditions.
- The Board's Technology Initiative would substantially change the conditions of teaching and learning.
- Therefore, let us think about achievements with a new vision of possibility.

Needed: A bold program of education for a transformative technology plan.

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The City as Educator

The ubiquitous, continuous presence of a high-quality electronic Education Zone greatly supports natural educational conditions.

- **Hitherto the school has contained the educational program.**
- **Henceforth the educational program will contain the school, as well as the home and the community – the entire City.**
- **The Education Zone strengthens the City – *civitas*, source of civilization, the original interactive cultural ethos – as the ubiquitous locus of educational work.**
- **All adults, groups, and organizations become educational facilitators working with a complete set of shared tools and resources.**
- **Schools and teachers become the pedagogical leaders, engaging the whole City in a continuous, comprehensive educational effort.**
- **Within this comprehensive effort, much educational control and responsibility shifts to the student, a shift that the emerging pedagogy must recognize.**

The edZone, 24/7, changes the conditions of educational work by students and teachers.

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The Stakes of Change

New York City can fulfill its leadership in the historic democratization of education.

- In the late 19th century, New York City was a leader in making compulsory elementary schooling for all take hold as a civic responsibility and entitlement.
- In the early 20th century, the City again led efforts to extend compulsory schooling into adolescence and to provide opportunities for universal secondary education.
- Through the 20th century, the City has sought to enable a widening sector of the population, ever more diverse, to gain access to higher education.
- Early in the 21st century, by creating the Education Zone and engaging all in its activities, the City can complete the the democratization of education by making an intellectually rigorous, progressive education a reality for all.

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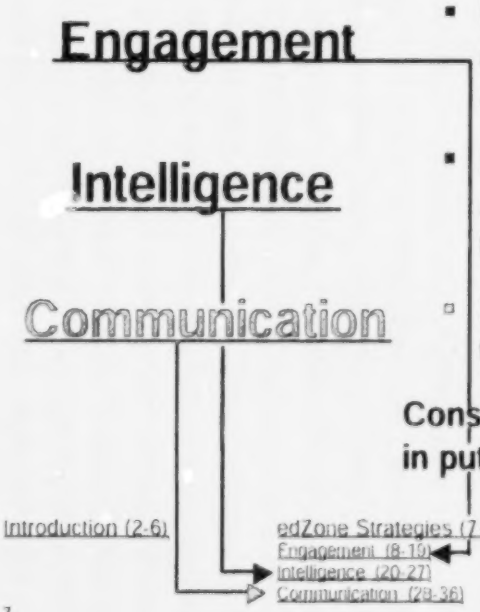
Three changes, each with great educational significance.

Changing the conditions of learning and teaching changes what goals are practicable and what means are effective. It creates a new ecology of education.

Through 24/7 interaction with the Education Zone, all students, teachers, administrators, and parents will have, at any time and any place,



- **Unlimited, selective access, opening universal participation in an unprecedented range of quality educational tools, resources, and experiences.**
- **Immediate, informative responsiveness by those resources, amplifying the working intelligence of students, and that of teachers, administrators, parents, and the whole community.**
- **Flexible opportunities for communication with others, facilitating the pursuit of curiosity and the construction of meaning.**

Consider the educational possibilities these changes bring, especially in putting the student in control of his or her education.

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Engagement

1st
CHANGE

Unlimited, selective access opens universal participation in an unprecedented range of quality educational resources

Providing access through the Education Zone to educational resources of great extent and deep quality makes important reforms much more feasible.

- **Respecting multiple learning styles.**
- **Cultural diversities become intellectual assets.**
- **Learning by inquiry.**
- **Using explanatory modules on demand.**
- **Assessment through portfolio construction.**

Educators will need to put powerful questions to students, thereby activating and directing their curiosity, leading them to exploit their opportunities for access.

- **The curriculum becomes a cosmos of questions to be asked, not a compendium of lessons to be learned.**

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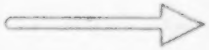
Diverse resources in the edZone challenge multiple intelligences

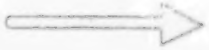
Linguistic **Musical** **Logical-mathematical** **Visual-spatial** **Bodily-kinesthetic** **Interpersonal** **Intrapersonal**

- **Traditional methods make it easy to confuse repetition with reinforcement, inducing boredom, not a sense of accomplishment.**
- **Few schools can deploy diverse instructional materials in classes that suit multiple intelligences and different learning styles.**
- **Students have little power to experiment with and control the learning styles they use.**



- **Reinforcement by experiencing a subject in ways that activate different forms of intelligence helps students develop a lasting mastery of material.**

- **Digital curricular resources can encompass multiple versions of the important topics, each adapted to a distinctive learning style.**



- **Explorations in the edZone give students more control over how they learn and what styles of learning they use.**

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Multiple intelligences in practice.

Project Zero's School Using Multiple Intelligence Theory
pzweb.harvard.edu/SUMIT/

The University of Rhode Island's Teachers in Technology Initiative
www.ri.net/RITTI_Fellows/Carlson-Pickering/MI_Tech.htm
www.chariho.k12.ri.us/curriculum/MISmart/mi_smart.htm

The Gardner School, Vancouver, Washington
www.gardnerschool.org/home.html

The New City School, St. Louis, Missouri
www.newcityschool.org/homepage.html

Case Study: Cultivating Multiple Learning Styles in Fish 101
www.washington.edu/computing/windows/issue20/johnson.html

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Cultural diversities become intellectual assets in a full curriculum.

Print-based curricula have limited carrying capacity.	The edZone presents full coverage of diverse cultural resources.
Textbooks have limited scope and curricula based on them present a narrow reduction of ideas uniformly to all. • Curriculum design consists in deciding on what to limit and exclude. • Groups compete for nominal inclusion, resulting in curricular superficiality. • Educators fail to reflect the complexity of their world, propounding a false homogeneity instead.	The edZone will include multiple traditions and interpretations, presented with intellectual integrity and fullness. • Curriculum design puts questions through which students generate unity in diversity. • Groups contribute their fullest potentials and assert the value of those for the whole. • Educators mobilize the cultural diversities of a world city as an educative force suited to a global age.

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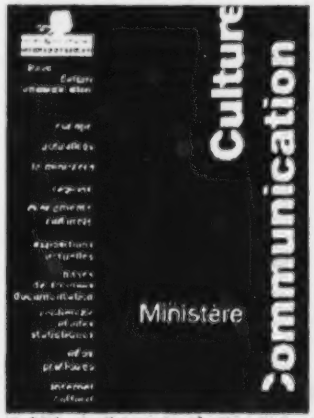
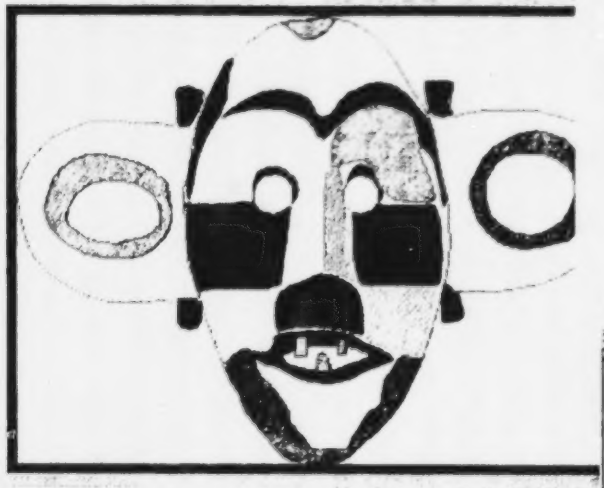
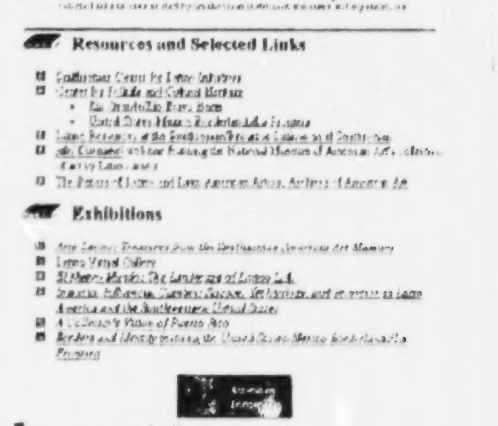
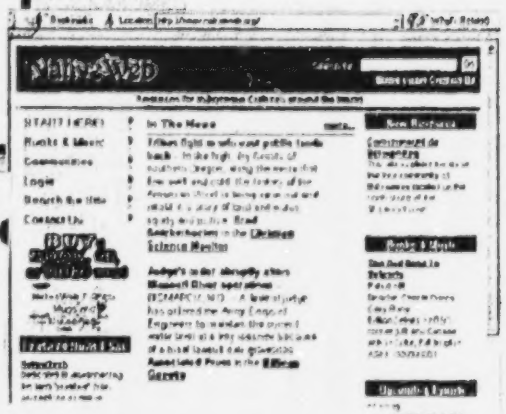
Strategies -- Engagement
Multiple intelligences
Cultural Diversities
Learning by Inquiry

World cultures on-line.









rt and Life in Africa Pr

http://www.uiowa.edu/~africart

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The edZone empowers learning by inquiry.

Strategies -- Engagement
Multiple Intelligences
Cultural Diversities
Learning by Inquiry
Explanatory modules
Portfolio Assessment
A Curriculum of Questions

Educators well recognize the value of learning by inquiry.

Despite many attempts by educational reformers, learning by inquiry often has not worked well because the resources in school libraries and staffs do not sustain students' inquiries well enough to produce substantial results.

Schools in low income areas, in particular, often avoid learning by inquiry because the intellectual tools – good libraries and laboratories – needed to sustain effective inquiry are not available.

The Internet is a vast research library and the edZone will make it usable. Every school, every student, every teacher, and every family will have a comprehensive set of intellectual resources with which to sustain all forms of inquiry.

Resources, alone, will not lead to productive inquiry. Teachers and the school have the essential role of posing powerful questions and setting problems in ways that will motivate productive inquiry.

As the Ancients said –

Philosophy begins in wonder.

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Diverse sites for inquiry-based learning.

Strategies -- Engagement
Multiple Intelligences
Cultural Diversities
Learning by Inquiry
Explanatory modules
Portfolio Assessment
A Curriculum of Questions

Manipulate the size of the circle and a rectangle to explore the probability that a dart thrown into the rectangle will land in the circle

Complex absolute value
Manipulate a complex number, z, and examine its absolute value, |z|. Use a ruler and the Pythagorean theorem to determine |z|.

Complex numbers in polar form
Experiment with complex numbers in polar form by varying r and θ or by dragging the points directly. View the corresponding Cartesian coordinates.

Defining a line with two points
Manipulate points. Compute the slope of the line between them, view the equations in slope-intercept and point-slope form.

Distance formula
Manipulate points and measure the distance between them using a ruler or with the distance formula.

Ellipse
Experiment with an ellipse in standar
Pythagorean relationship, and visual

Exponential functions
Experiment with and visualize functi
doubling/halving intervals

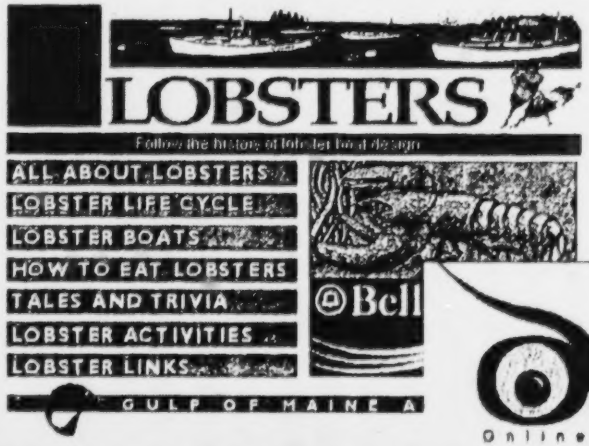
Hyperbola
Experiment with a hyperbola in stan
and foci, and visualize the string pro

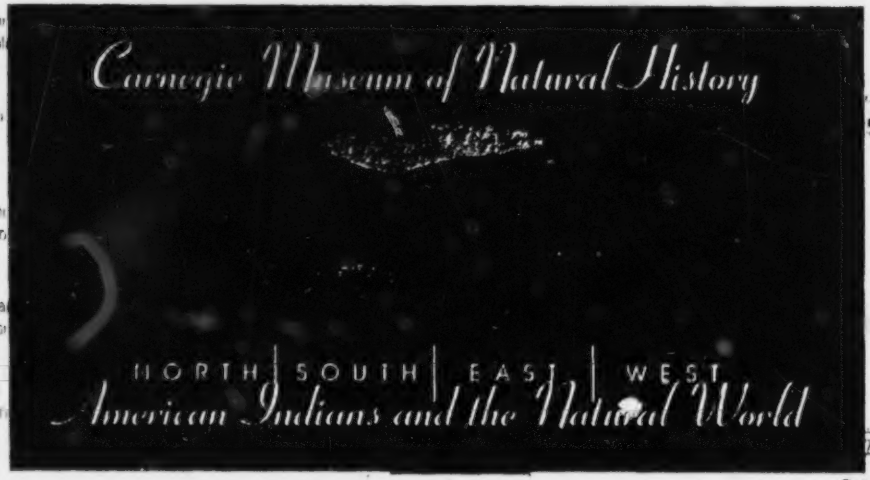
Least squares fit line
Manipulate points and fit a line by ha
compute the least squares fit line fo

Linear inequalities
Manipulate and visualize the solution

Linear Programming

14





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Learning becomes cumulative, rather than sequential.

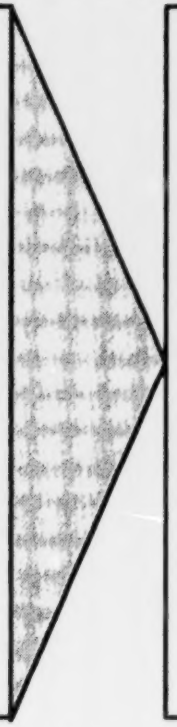
Students can use explanatory modules on demand – short, lucid clarifications of the ideas and concepts that they should master in meeting high learning standards.

Existing curricula are too sequential.

Students who do not learn something well at the required time in the sequence have difficulty going back and getting it right when they realize they missed something.

It is hard for teachers and students to jump ahead selectively when curiosity is ripe.

Unanticipated reviews of material from prior grades are almost impossible.



In the edZone, mastery can be cumulative, for it can include a complete matrix of explanatory materials at multiple levels of depth.

A good pedagogy in college and graduate school is to have students develop short multimedia modules explaining basic elements of their field. The Education Zone will collect and organize these for on-line use on demand.

A matrix of explanations becomes the essential resource for continuous, life-long learning.

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Learning modules for on-demand use.

Strategies -- Engagement
Multiple Intelligences
Cultural Diversities
Learning by Inquiry
Explanatory modules
Portfolio Assessment
A Curriculum of Questions

www.worldcom.com/marcopolo/

Content

Economics
National Council on Economic Education

Geography
National Geographic Society

Humanities
National Endowment for the Humanities/ Council of the Great City Schools

Mathematics
National Council of Teachers of Mathematics

Science
American Association for the Advancement of Science

The Arts
The Kennedy Center

http://www.econedlink.org/ — EconEdLink

http://www.nationalgeographic.com/xpeditions/ — XPEDITIONS

http://edsitement.neh.gov/ — EDSITEment

http://illuminations.nctm.org/index2.html — ILLUMINATIONS

http://www.sciencenetlinks.com/index.html — Science NetLinks

http://artsedge.kennedy-center.org/ — ARTSEDGE

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Assessment through portfolio construction is feasible.

Current difficulties Physical objects complicate portfolio logistics		Emerging possibilities Digital portfolios are easier to use and more flexible
• Student's work is hard to save and easily damaged.	→	• Student work is easy to save and safe to use.
• Comparisons showing progress over time are awkward to make.	→	• Comparisons, within and across portfolios, are easy to make.
• Linking teacher assessment to examples of work is cumbersome.	→	• Assessments easily become permanent components of a digital portfolio.
• Setting follow-up assignments incurs logistical problems.	→	• Teachers can embed links to further resources in comments.
• Portfolios are hard to transfer from one school to another and unwieldy for use in the college entrance process.	→	• On-line portfolios are stable over time and can move from school to school and are more useful to colleges and employers.

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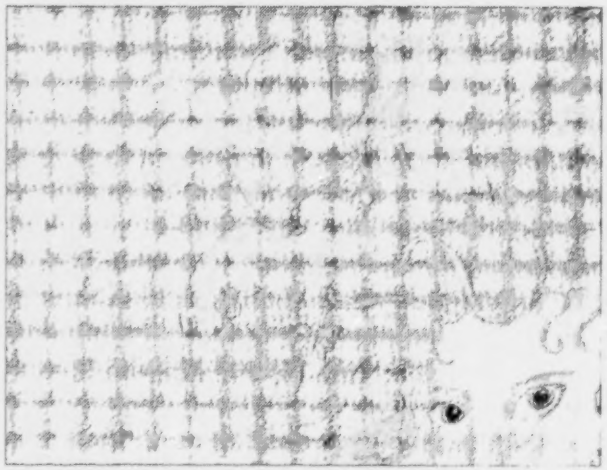
Electronic portfolios in action.

Dr. Helen Barrett maintains an excellent site, *Using Technology to Support Alternative Assessment and Electronic Portfolios*.

Schools that are exemplary in using portfolios include
Mt. Edgecumbe High School in Sitka, Alaska.
Hunterdon Central Regional High School, Flemington, New Jersey.

Spring



This was an expression piece that I did this year for G&T Art II. The project objectives of the project were that we had to pictorially represent a season using water colors. I chose to represent spring because it seems so fresh, young, and uplifting. for the most part, I'm pretty happy with the outcome of the picture. There are a few things that I'd change if I could do it over. I would add more flowers and I would make her hairline a little lower. She's supposed to be a young girl with her whole life ahead of her not an old lady with a receding hairline.

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A curriculum of questions, not lessons.

The edZone:

Access supports engagement

Educators will need to put powerful questions to students, thereby activating and directing their curiosity, leading them to exploit their opportunities for access.

- **The curriculum becomes a cosmos of question to be asked, not a compendium of lessons to be learned.**

Students, by virtue of making continuous selections about how to direct their attention and activity, take fuller responsibility as the primary agent shaping their own education.

Teachers have essential roles as guides and goads – informing and sustaining their students' inquiries. They serve less as the font of knowledge and more as the source of questions.

Parents are on the inside and can support their children's work, neither interfering nor ignoring. They can participate with their children and their educators in the pursuit of insight about difficult questions.

Schools have the opportunity to serve as community learning centers, shared resources and opportunities to participate in cultural life.

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Intelligence

2nd CHANGE

Immediate, informative response by educational resources amplifies the working intelligence of students, teachers, and parents.

Embedding capacities for immediate, intelligent response in educational resources provides enhanced learning experiences.

- **Deepened understanding through quality simulations.**
- **Improved basic skills through use of adaptive, integrated learning systems.**
- **Better habits through the automatic flagging of errors in spelling, grammar, usage, and calculations.**
- **Superior output through regular use of on-line tools for searching, storing, analyzing, and synthesizing knowledge -- a Cyber Pilot.**
- **Complex tracking of student progress and interests, with feedback to students, teachers, and parents.**

Educators will need to adapt learning goals to a situation in which the everyday tools of education amplify the capacities of all persons to spell, write, remember, organize, calculate, select, analyze, and synthesize.

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Complex simulations engage interest and deepen understanding

From learning about		To learning as
• Most learning in schools requires absorbing one-way communication from the teacher to the student, with the communication consisting of information about the subject at hand.	⇒	• On-line simulations for individuals and groups engage students in learning as knowledge professionals, mobilizing ideas and tools to carry out productive tasks of intrinsic value..
• Students experience intellectual skills, not as means to employ in the course of education, but as the goal and objective of the education itself.	⇒	• Students experience skills as important means to acquire in order to achieve the goals of the simulation. Learning is thus aligned with the uses of real knowledge.
• Communication between students is usually off topic, a distraction from the isolated task of learning about the matter the teacher expounds.	⇒	• Students and teachers communicate together about the tasks underway and experience their interactions as integral elements of professional work.

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Adaptive, integrated learning systems improve basic skills.

The edZone can take drill and practice out of the classroom; make it diagnostic through continuous, built-in assessments running in the background; and provide it to all students whenever and wherever they may need it.

Continuous access to adaptive learning systems designed to promote mastery of basic skills in mathematics and language arts can ensure that all children are ready to engage in meeting high learning standards in a spirit of thoughtful self development.

Children who most need a lot of feedback and practice often have the least opportunity to get it. Good on-line skill-building programs can correct this inequity without depriving them of opportunities for more challenging problem-solving and collaborative learning experiences.

Every child in the New York City schools should be at or above grade-level in basic skills from the 6th grade onwards.

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Automatic flagging of errors creates better habits.

Tool software that automatically flags suspected errors in spelling, grammar, and accuracy can provide students with routine immediate feedback that helps them build good skills.

- **When students do not realize they are making errors, they will keep on doing so.**
- **Teachers and parents cannot promptly make routine corrections for all students all the time.**
- **Programs that flag errors provide students essential feedback and relieve teachers and parents from the burden of routine work, enabling them to concentrate of complex problems and questions of value.**
- **Tools that reduce the burden of complex calculation allow students to concentrate on mastering powerful concepts.**

Tool software changes the relative pedagogical balance between routine skill training and the development of higher-level problem-solving capacities.

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On-line tools – a Cyber Pilot – strengthen knowledge creation.

The World Wide Web differs significantly from the mass media. The WWW is an interactive storage and retrieval system, similar to a flexible, comprehensive library. Development of its content and its tools for use is in its infancy and will progress rapidly in the coming years.

- **With tools for searching, storing, analyzing, and synthesizing knowledge based on resources in the edZone, students will strengthen their capacity to solve problems and present results.**
- **With tools for working actively with on-line content, students will be able to express their ideas and accomplishments to others, evoking encouragement and criticism.**
- **With tools for creating a personal workspace, available whatever the time or place, students will integrate their learning across subjects and grades more effectively.**
- **With tools for working together on substantive materials, intellectual collaboration will displace recitation as the basic form of group instruction.**

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Useful on-line tools are now available.

GuruNet One-Click for Windows

Downloading GuruNet One-Click puts the true power of the Internet b screen.

Take a Test Drive

Demo

Get GuruNet Now

1. **Click here** to **download** GuruNet now (full instructio
- OR -
2. **Click here** if you prefer that we **send** you the Guruh

Feel free to review our Privacy Policy.

Benefits of GuruNet One-Click

1. Always there when you need it: any word, anywhere, anyt
2. No typing-- just point at any word and alt-click
3. Instead of searching, GuruNet *brings* the answer to you
4. Smart-- takes advantage of context words automatically
5. Brief-- delivers what you need to know
6. Simple popup window-- does *not interrupt* your work
7. *Fast!*

To use IntelliZap, hold down the [Ctrl] key, and at the same time [Right Click] with your mouse on your search word.

Immediately, Zapper will pop-up

COLUMBIA CENTER FOR NEW MEDIA TEACHING AND LEARNING

columbia university analyzer

a special edition of hyperfolio

about demos downloads support evaluation

About

The Columbia University Analyzer (CU Analyzer) is a unique web-based tool that allows one to capture, analyze, and ultimately express new knowledge using multimedia objects culled from anywhere on the web. It is a true departure from typical digital tools as it empowers the user to control his or her online experience through the use of a personal digital portfolio. No longer is the online experience limited to surfing, bookmarking, or elaborate downloading schemes. With the CU Analyzer, users can quickly create their own web-linked multimedia expressions using content from any website. The CCNMTL hopes this tool is the first in a series of online tools developed by the Center that provide students and faculty with a seamless online learning environment.

CU Analyzer

Columbia University Analyzer is a plug in for your browser that allows you to collect assets (text, links, audio, video, and images) off any Website simply by dragging and dropping. You can then expand CU Analyzer to organize those assets on worksheets. CU Analyzer provides a set of tools and a large workspace for cataloging, organizing, and exporting assets and worksheets in a variety of ways. It is intended to serve as the intermediate environment between gathering data and publishing your own creation. CCNMTL is developing CU Analyzer in conjunction with Learn Technologies Interactive.

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Intelligent tracking improves educational decisions and choices.

Current information about a student's progress, and its use, is limited.		Students, teachers, and parents can get timely, significant feedback on-line.
• Physical records are hard to manage and information in them is difficult to use.	→	• On-line records, rich with examples, managed through a flexible retrieval system, become more actively useful.
• As students move from grade to grade, school to school, district to district, chances diminish that useful information about their work will move with them.	→	• Students' educational work can become more cumulative as their interests and accomplishments travel with them. What they have accomplished becomes more visible.
• Feedback to students and parents often lacks context and diagnostic depth. They often experience it as an *ad hominem* rejection, painful but not helpful.	→	• Feedback can be more timely and connected to examples. Educators can shape it to inform responsible choices by students and their parents.

Through the edZone, the school, the home, and the community can coordinate their educational work.

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Adapting the curriculum to new learning goals.

The edZone:

Responsiveness evokes intelligence

Technology enabled change in educational practice occurs when new means alter the fundamental repertoire of skills that the well educated person needs to master.

Hitherto the tools of education have been illuminating, but not actively responsive. Digital technologies permit the design of responsive educational resources.

Technologies increasingly assist and amplify basic skills – the ability to spell and to write with correct grammar and diction, to calculate simple and complex functions, to categorize and remember, to diagram, to map, to annotate, even to translate.

In the edZone, where responsive tools become available to all people at all places all of the time, opportunities for the cultivation of intellect and intelligence increase and the fundamental question – What knowledge is of most worth? – will be hotly debated anew.

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Communication

3rd
CHANGE

Flexible opportunities for communication with others, facilitating the pursuit of curiosity and the construction of meaning.

People must make their knowledge meaningful in their lives, which they do by communicating with each other. Good digital technologies will allow students, teachers, and parents to engage more easily and widely in communicating about the significance and value of their educational work.

- **Fuller use of opportunities for collaborative learning.**
- **Enhanced problem-solving as students can reach beyond the classroom and school for input and answers.**
- **Mentoring across age groups.**
- **Virtual apprenticeships become more fully feasible.**
- **Improved teaching through just-in-time professional development and consultation with experts on-demand.**
- **Linking the school, the home, and the community in a shared field of educational interaction through the edZone.**

Educators will need to transform the school into a communications hub, not a closed circuit.

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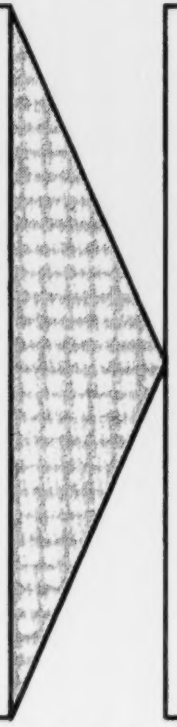
The edZone creates opportunities for collaborative learning.

Collaborative learning is fun and effective, for knowledge is a social enterprise. Working together as peers builds social bonds and a sense of value.

Collaborative learning works best when students join to work on difficult problems, equipped with effective tools and resources.

Collaborative learning works best when students sustain shared inquiries over time and engage in substantial communication with each other.

Collaborative learning works best when students present their accomplishments in public and feel responsible for the credit and criticism their work may receive.



The edZone provides an interactive field in which collaborating students can work together easily, in school or out.

The edZone provides students with comprehensive tools and resources, enabling them to pursue intrinsically difficult problems as far as their capacities will take them.

The edZone is a public arena in which parents, teachers, and the general public can view the results of students' work, providing comment and feedback.

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Students can effectively engage in problem-solving.

Learning by problem-solving has limitations in traditional schools.

- Reliance on learning about leads to dependency on predictable, stock problems, which trigger exercise and practice, not open-ended inquiry.
- Effective inquiry requires full resources and tools pertinent to the question. Few schools can provide their students with sufficient tools – as a result inquiry often produces frustrated superficialities, not deep understanding.
- Frustrated inquiry is rarely cumulative. Students drop problems without seeing how they lead to further, more challenging questions.

The edZone creates conditions for students to learn well through inquiry.

- Opportunities to learn as creators of knowledge encourage posing real problems, challenging students to generate and test significant ideas.
- With the edZone, all resources and tools are available to all students, from any place at any time. Thus the conditions for effective inquiries are in place and students can carry them to a point of significant understanding.
- Open-ended inquiry leads, not to conclusive answers, but to further questions and to insight into why those further questions are important.

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Examples of resources for inquiry learning.

Elementary

www.pbs.org/wgbh/nova/pyramid/
Excellent in every way: graphics, text, clarity, questions.

www.exploratorium.edu/cycling/
Physics - elementary.

dorishill.tripod.com/id16.htm
Bats

www.fi.edu/city/water/
Elementary science. Attractive page.

www.fi.edu/qa98/atticindex.html
An excellent array of inquiry topics visible by scrolling.

www.miamisci.org/af/sln/phantom/mightymolecules.html
Elementary chemistry. Atoms via "Adams family."

chickscope.beckman.uiuc.edu/
Elementary. Science.

www.bsu.edu/teachers/burris/iwonder/
Homepage of inquiry site. Math & science through museums.

Secondary

www.letus.org/bguile/
Secondary biology inquiry.

asterix.ednet.lsu.edu/~edtech/webquest/titanic.html
Titanic. What can numbers tell us about her fatal voyage? Math

www.manteno.k12.il.us/drussert/WebQuests/HallOvandoRobinson/start.html
What can 1 person do about hunger? Plenty. Start here. Social issues.

www.geom.umn.edu/apps/gallery.html
Gallery of interactive geometry

www.exploremath.com/activities/Activity_page.cfm?ActivityID=13
Quadratic equations

www.mgw.dinet.de/physik/ChaosSpiel/ChaosEnglish.html
Chaos theory

www.vkp.org/
Secondary. Interdisciplinary. Resources to connect art and other disciplines.

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Mentoring across age groups becomes effective in the edZone.

Grouping students by age dominates schools. Insofar as students need to learn the same thing at the same time and they do so best when grouped together roughly according to their abilities and stages of development, age-grouping is a useful expedient. It leaves out a great deal, however.

- **Younger children learn and form aspirations in interaction with older children.**
- **Less developed students can test and challenge themselves through interaction with more developed peers.**
- **Older students can learn a lot by having to act as teachers and mentors with younger students. Becoming more aware that they are resources for others and role models heightens their sense of responsibility and self worth.**

The edZone provides means for students to interact flexibly, in school and out, across formal age groupings. Educational service within the edZone should become an expectation and norm for all.

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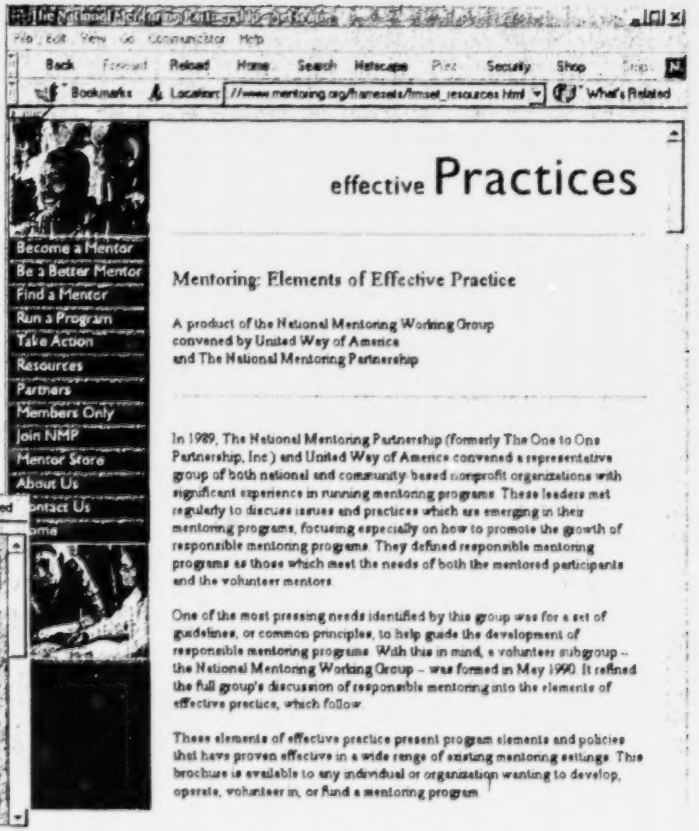
Smart Cities:
New York

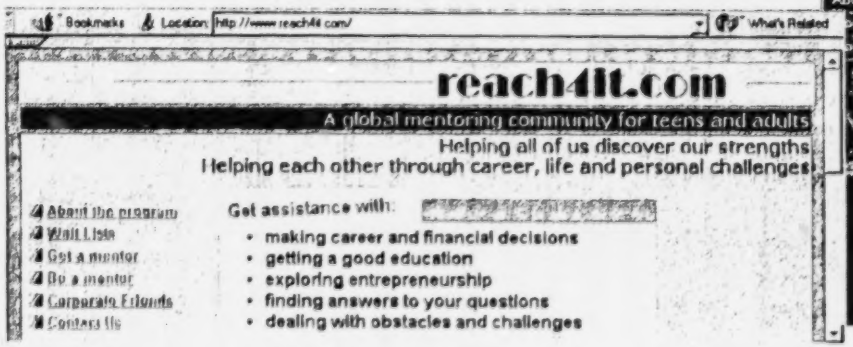
eEducation for
the New Millennium

Mentoring through the edZone.

Strategies -- Communication
Collaborative learning
Problem-solving
Mentoring 2
Virtual Apprenticeship
Just-in-time PD
Educational linkages

Digital technologies serve as both a coordinating mechanism and as a mentoring medium. They greatly reduce the logistical impediments.


effective Practices
Become a Mentor
Be a Better Mentor
Find a Mentor
Run a Program
Take Action
Resources
Partners
Members Only
Join NMP
Mentor Store
About Us
Mentoring: Elements of Effective Practice
A product of the National Mentoring Working Group
convened by United Way of America
and The National Mentoring Partnership
In 1989, The National Mentoring Partnership (formerly The One to One Partnership, Inc.) and United Way of America convened a representative group of both national and community-based nonprofit organizations with significant experience in running mentoring programs. These leaders met regularly to discuss issues and practices which are emerging in their mentoring programs, focusing especially on how to promote the growth of responsible mentoring programs. They defined responsible mentoring programs as those which meet the needs of both the mentored participants and the volunteer mentors.
One of the most pressing needs identified by this group was for a set of guidelines, or common principles, to help guide the development of responsible mentoring programs. With this in mind, a volunteer subgroup -- the National Mentoring Working Group -- was formed in May 1990. It refined the full group's discussion of responsible mentoring into the elements of effective practice, which follow.
These elements of effective practice present program elements and policies that have proven effective in a wide range of existing mentoring settings. This brochure is available to any individual or organization wanting to develop, operate, volunteer in, or fund a mentoring program.


reach4it.com
A global mentoring community for teens and adults
Helping all of us discover our strengths
Helping each other through career, life and personal challenges
About the program
Wait Lists
Get a mentor
Be a mentor
Corporate Friends
Contact Us
Get assistance with:
making career and financial decisions
getting a good education
exploring entrepreneurship
finding answers to your questions
dealing with obstacles and challenges

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The edZone makes virtual apprenticeships feasible.

The edZone allows students to study disciplines and professions as if they are practitioners of them.

The Internet allows the direct observation of scholars, researchers, and professionals at work with their data, tools, and instruments available to the observer. Collaborative groups can interact as participants at an distance, learning by virtual doing in real time in real settings.

In schools it is important to deploy communications technologies so that they empower collaborative groups. Groups can convene on-line, or face-to-face, with information technologies providing substance for thoughtful collaboration and the facilitation of meaningful interaction.

Outside of school the edZone provides means for students to enter into virtual apprenticeships across a very wide range of interests. As peers engage in the shared evaluation of projects and in criticizing the quality and value of their results constructively they will make virtual apprenticeships highly effective educational experiences.

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Just-in-time professional development.

The best teachers hone relatively static skills, acquired early in their careers.		Teachers will expand the knowledge they use and diversify their skills.
Texts and tests have largely determined the scope and sequence of ideas that teachers engage with their students. The need to acquire new knowledge on the job is low.	⇨	Students will interact with the full culture and teachers will facilitate and assess inquiries into matters about which they have little prior knowledge. The drive to learn new things becomes continuous.
Pre-service professional development has provided decontextualized career resources that a teacher turns into his or her characteristic cast of practice in the first few years on the job.	⇨	Professional resources become mobile and can be brought to bear on-demand, at the point of need. Pre-service preparation becomes increasingly an initiation in the scope and use of these on demand resources.
In-service professional development is episodic and difficult to put into practice in a constrained working environment that reinforces each teacher's initially acquired style.	⇨	Practice becomes a more many-sided process of problem-solving in an environment that becomes less predictably structured. Teachers can put on-demand help immediately to use.

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Educating the whole person by the entire city.

Strategies – Communication
Collaborative learning
Problem-solving
Mentoring
Virtual Apprenticeship
Just-in-time PD
Educational linkages

The edZone links the school, the home, and the community in a shared field of educational interaction.

Traditionally schools and classrooms have been closed communications systems. So too the family. The result fragments educational work, making it hard for teaches, parents, and the public to join together in a shared effort.

Students experience this fragmentation as alienating, with education becoming a series of things that different groups and institutions seek to do to them.

Communication between school and home is awkward and creates a significant overhead draining the educational effort that each can sustain.

An alternative to increased communication between closed systems is participation by each in a shared, common field of educational interaction, the edZone. Coordination is spontaneous when all have the same resources and tools.

Students can better take responsibility for their education, able to explain their choices when they know that all have access to the same field of interaction.

Working with shared tools and resources, the school, home, and community can communicate through a fluid collaboration, not a mutual distraction.

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Towards educational justice in a cultural democracy.

The edZone provides all students with educational resources of great power and depth.

4th Grade (2002-2003 and on) **New York City school population scores roughly the same as the rest of the State.**

8th Grade (2006-2007 and on) **All New York City 8th grade students pass the intermediate-level assessments in English, mathematics, science, and social studies.**

12th Grade (2010-2011 and on) **All New York City seniors graduate with Regents diplomas.**

**Equipped to succeed,
all students should graduate successfully.**

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Cumulative educational experience.

Traditional schooling has been sequential, a progression from grade to grade. In the edZone, education becomes cumulative, an expansive mastery of resources in the culture.

The physical condition of books forces educational experience to be sequential. The mechanics and scale of books further accentuates the division of knowledge into discrete subjects.

Students must leave curricular materials for each year behind as they move to the next grade. Students do not have the knowledge resources at hand to easily review, compare, or anticipate work slotted for some other time.

The curriculum becomes a set of discrete subjects, experienced in a strict order, the curricular scope and sequence.

All the resources of the edZone are available to any student from any place at any time. As a result, students can more easily build on the interconnectedness of experience and leaning, over time and across subjects.

Students easily draw on knowledge and ideas they experienced in prior grades in working on current problems. They can reach ahead when sudden insight shows where a questions might lead.

The edZone displaces curricular scope and sequence with a more powerful resource -- a cumulative curriculum.

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With the new educational strategies, students work purposively.

Too often students experienced intellectual means as ends.

Traditional education tends to convert intellectual skills and techniques, which people employ in the course of experience, into educational ends, learning objectives of inherent value.

- Basic skills -- correct spelling, accurate calculation, knowledge of dates, places, etc. -- become signs of worthy achievement.
- Subjects, represented by epitomes of acquired knowledge, displace disciplines, as systematic ways to generate and validate knowledge.

This process reduces education to dead routine.

Students will experience intellect as resources for thinking productively.

The edZone will represent intellectual skills and techniques in their fullness, not through epitomes, and avail them to students as useful resources in pursuing questions of substantial import.

- Students will experience basic skills as acquisitions that speed and facilitate work on challenging matters.
- Students will employ different disciplines as organized means for the advancement of knowledge about interesting matters.

Education becomes purposeful effort to assuage shared concerns and curiosities.

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Continuity with Learning Standards.

Learning standards indicate the intellectual agenda that students should engage and master.

The standards and the resources requisite for meeting them should become a public reality, manifest in the cultural experience of all people at all times and all places.

The standards are not merely delegated to the school, closed within it and irrelevant to the rest of life. The conduct of life – the level of disciplined intelligence, judgment, and discourse expected in politics, business, the media, and personal conduct – should routinely excel the standards at their best.

The standards indicate the intellectual tools and resources students should be able to use with competence in addressing questions and problems of importance.

All students, teachers, and parents should continuously command usable, comprehensive resources supporting attainments that excel the standards. Student tracking and feedback should map achievements relative to the skills and capacities that the standards define.

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The edZone and English Language Arts.

Excellent resources supporting the English language arts learning standards exist. The edZone will make them available, fully and continuously, to all students, teachers, and parents.

Tools in the edZone will expand the support students have in mastering the mechanics of reading, writing, speaking, and listening. Consequently, interpersonal interactions in the language arts can emphasize the development of meaningful communication.

Using and making multimedia productions will bring greater diversity and authenticity to the contexts for reading, writing, speaking, and listening in classrooms.

The edZone brings all learning resources together in one, integrated comprehensive setting, facilitating efforts by teachers and parents to work with students to develop skills in reading, writing, speaking, and listening across all content areas and standards.

A comprehensive set of tools and resources, available at all times and all places, will help students draw productive connections between their study of reading, writing, speaking, and listening in school with activities in the home, at work, and in the community.

A 10% improvement, compounded from 4th grade through 12th, more than doubles achievement.

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World literature for all.

edZone Practice – Learning Standards
English Language
Social Studies
Mathematics—Science—Technology
The Arts
Other Languages
Physical Education & Career Development

The On-Line Books Page

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Celebration of Western Writers now at Penn - Celebration of XX Century On-Line Books - Latest Book Listings

FEATURES

A Celebration of Western Writers - Banned Books On Line - Penn Writers On Line (in preparation)

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Hosted by Carnegie Mellon University

Vision for the Universal Library

- **Maxim: Access to all human knowledge - anytime, anywhere.**
- **Access, query, and print any book, magazine, newspaper, video, data item, or reference document:**
  - regardless of language
  - using speech, touch screen, or gestures
  - *Mike Shamos on the Universal Library (Windows Media, 512kbps stream)*
    Download this file directly (for modem users)
- **Challenges in data access:**
  - High bandwidth networking for multimedia access
  - Intellectual property protection while facilitating access
  - Intelligent information retrieval
  - Delivery and protection of critical information

Art
Books

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ABOUT DANTE THE COMEDY LIBRARY

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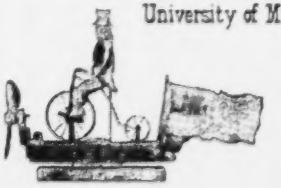
Seagate

University of Michigan Humanities Text Initiative



American Verse Project

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The edZone and Social Studies.

The edZone will provide social studies content in unparalleled fullness and depth.

The edZone should key content to the State's eight critical dimensions of teaching and learning: intellectual skills, multidisciplinary approaches, depth and breadth, unity and diversity, multiculturalism and multiple perspectives, patterns to organize data, multiple learning environments and resources, and student-centered teaching, learning, and assessment.

Modules should clearly explain the key concepts of the program in history, geography, economics, and civics and these explanations should link to a variety of cases and examples illustrating their pertinence to historical, geographical, economic, and political life.

The edZone should include a variety of simulations and collaborative learning opportunities pertinent to the full range of skills and ideas comprised in the social studies.

The edZone should provide parents and teachers with full resources for understanding the learning tasks that students face and the means to collaborate in helping individual students work successfully.

The edZone should enable students of the social studies to participate actively in the public life of the City.

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Smart Cities:
New York

eEducation for
the New Millennium

Resources for social studies.

edZone Practice – Learning Standards
English Language
Social Studies
Mathematics—Science—Technology
The Arts
Other Languages
Physical Education & Career Development

The Library of Congress

American Memory
Historical Collections for the National Digital Library

Over 90 Collections Now Online

Collection Finder
Select a collection or group of collections to search

Search
Search for items across all collections

Learning Page
Organized help for students, teachers, and life-long learners

Today In History
November 29, 2000

What's New!

Frequently Asked Questions

NEW DEAL NETWORK

How To View | Copyright & Restrictions | Technical Information | Future Collections

National Archives and Records Administration NARA

Search | Research Room | Records Management | Federal Register | Exhibit Hall
Search | Digital Classroom | Archives & Preservation | About NARA | Home

Primary Sources and Activities

This page contains reproducible copies of primary documents from the holdings of the National Archives of the United States, teaching activities correlated to the National History Standards and National Standards for Civics and Government, and cross-curricular connections.

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The edZone and Mathematics.

The edZone should provide programs to exercise student's basic skills in calculation, to empower students to perform diverse mathematical functions accurately and rapidly, and to stimulate students to engage in the construction and explanation of mathematical theory and proof.

The edZone should help students, teachers, and parents deal with three principles of best practice emphasized in the New York State learning standards – inquiry approaches; mathematics, science, and technology integration; and equity.

To support inquiry approaches, the edZone should include powerful sets of mathematical tools designed to allow students to explore geometric, mathematical, and logical relations, and to test, explain, and demonstrate generalities about them. The edZone should have associated resources helping teachers and parents stimulate and guide student inquiry.

To support equity, the edZone should make available on-line tutorial help for students, teachers, and parents who find themselves stumped by a mathematical resource.

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edZone Practice - Learning Standards
English Language

Mathematics Re

ILLUMINATIONS
PRINCIPLES & STANDARDS
WORLDCOM
Welcome to the Homepage

Grades Pre-K-2
Grades 3-5
Grades 6-8
Grades 9-12
Across the Grades
Site Map
Search

Gateway to Standards-Based Mathematics Education

Welcome to the Illuminations website! This site is designed to "illuminate" the new NCTM Principles and Standards for School Mathematics.

On this site you will find internet resources to improve the teaching and learning of mathematics

Each grade band contains these five sections

- **i-Math Investigations** — Ready-to-use, online, interactive, multimedia math lessons
- **Reflections on Teaching** — Reflection activities based on video vignettes of teaching and learning
- **Selected Web Resources** — The best mathematics education web resources reviewed by our panel
- **Internet-Based Lesson Plans** — Lessons developed by expert teachers that you can use in your classroom
- **Principles and** — Searchable interactive version of the

Welcome to TCAEP.co.uk

Science

- Constants - NEW - Over **600** alphabetically listed entries
- Equations - NEW - Some **450** entries
- Periodic Table - NEW - Complete periodic table with info on each element
- Conversions - Interactive conversion of over **500** units
- Java Structurer - UPDATED - Create your own interactive chemical compounds to find their systematic names
- Symbols - Greek alphabet, electronic symbols and mathematical symbols
- SI Units - Details on all the standard SI Units of measurement

Maths

- Topics - Explanations of the more common aspects of maths. Over **400** links
- Numbers - UPDATED - Addition & Multiplication tables, log tables, metric prefixes and more
- Algebra - All the common algebraic identities, including complex numbers
- Trigonometry - Identities
- Integration - Integral functions
- Differentiation - Table of differential functions

Astronomy

- Planets - NEW - Details on all the currently known planets and their satellites
- Constellations - Table of constellations
- Sunrise & Sunset Times - NEW - Times for 231 locations around the world
- Moon Phases - Tables of moon phases for the next 20 years

Welcome to ***The Constants and Equations Pages***, an **award-winning** project providing one of the internet's most comprehensive sources for information on constants and equations, as well as much, much more. There are currently over **4,500** pages of information on this site.

enc
Eisenhower National Clearinghouse

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COLORFUL MATHEMATICS

Mathematics computer games

Colorful Mathematics is a series of educational software presenting advanced mathematical concepts to K-12 students in a game-oriented approach. The five games offered utilize simple coloring and/or drawing techniques to illustrate some state of the art mathematical concepts from graph theory and computer science.

THE MATH FORUM
"Where there is math there is geometry." Plutarch

What's New

New FAQs T2T
Varnelle's Primary Math
Mathematics and Elections

Forum Features

Search for Math or browse our Internet Mathematics Library

Ask Dr. Math
Discussion Groups
Forum Showcase
Internet Newsletter
Problems of the Week
Teacher2Teacher
Web Units & Lessons

Math Resources by Subject
K-12, College, & Advanced Math

Math Education
Key Issues in Math
Innovations and Concerns

The edZone and Science.

The edZone will provide a wealth of explanatory modules, multimedia clarifications, and interactive simulations clarifying key concepts across all the sciences.

The edZone will greatly increase the accessibility of the practicing scientist, along with the data and instrumentation at the base of scientific inquiry. The Internet is a fundamental resource in the practice of science, engineering, and technology. Students become able to observe science at work and the edZone should provide them with the means to ask how and why working science functions as it does.

Powerful computer-assisted design tools can enable students to see the integration of mathematics, science, and technology by engaging in real-world engineering design projects.

The edZone should enable students, teachers, and parents to connect the diversity of scientific resources on the Internet to the seven NY State MST learning standards and to map how each student's scientific explorations in the edZone relate to the range of expectations established through the standards.

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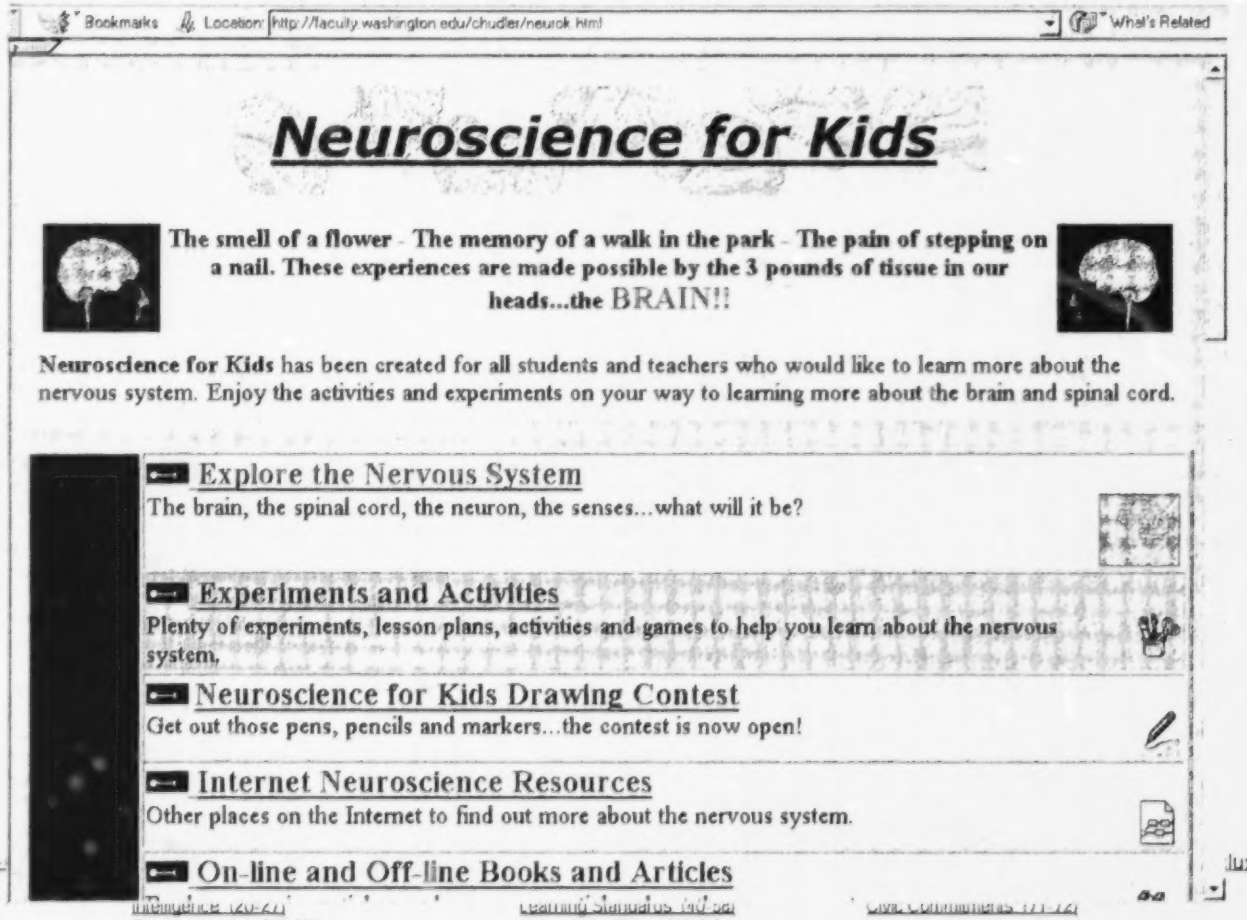
Science Resources.


Bookmarks
Location: http://faculty.washington.edu/chudler/neurok.html
What's Related
Neuroscience for Kids
The smell of a flower - The memory of a walk in the park - The pain of stepping on a nail. These experiences are made possible by the 3 pounds of tissue in our heads...the BRAIN!!
Neuroscience for Kids has been created for all students and teachers who would like to learn more about the nervous system. Enjoy the activities and experiments on your way to learning more about the brain and spinal cord.
Explore the Nervous System
The brain, the spinal cord, the neuron, the senses...what will it be?
Experiments and Activities
Plenty of experiments, lesson plans, activities and games to help you learn about the nervous system.
Neuroscience for Kids Drawing Contest
Get out those pens, pencils and markers...the contest is now open!
Internet Neuroscience Resources
Other places on the Internet to find out more about the nervous system.
On-line and Off-line Books and Articles

Introduction (2-
lusion (72-74)
Communication (28-36)
Using the edZone (59-64)

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The edZone and Technology.

The edZone itself should encompass all the information technologies that students, teachers, and parents might need to encounter.

Students should develop an understanding of technology by learning *through* its use, seeing it as a facilitating means with distinctive strengths and limitations. It is important to exercise care in the design of the edZone to ensure that its component technologies serve students, teachers, and parents effectively. Poor implementation of technical resources mystifies technology, creating experiences of it in which authorities invest it with an aura of importance while the user feels let down.

Simulations in the edZone should provide a clear understanding of how and why fundamental technological innovations take hold in human experience and consequently transform and shape historical life.

In the edZone, technology should be a unifying study, linking science, art, social studies, language and communication, careers, and on, in a complex reflection on basic choices, personal and collective, that people need to make as they face the indeterminacies of their future.

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Resources on technology.

edZone Practice – Learning Standards
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Social Studies
Mathematics—Science—Technology
The Arts
Other Languages
Physical Education & Career Development

Bookmarks Location: http://www.sciencenetlinks.com/index.html What's Relate

American Association for the Advancement of Science WORLDCOM
Science NetLinks

Search MarcoPolo GO ADVANCED
home e-mail forums about SNL

III. Nature of Technology Online Resources

Educational Super Sites

National Air & Space Museum
The National Air and Space Museum's Internet site is organized primarily to highlight the exhibits in the museum.

The Nine Planets
The Nine Planets site, created by astronomer Bill Arnett, is a comprehensive overview and often-detailed discussion of the planets in our solar system and their related satellites, with accompanying graphics and photos to enhance any learner's understanding.

Science Learning Network
The Science Learning Network(SLN) is a partnership among six science museums and funded by Unisys Corporation and the National Science Foundation.

The Tech Museum of Innovation
The Tech Museum of Innovation's website is a unique resource for young and old.

Energy Quest
Energy Quest is a comprehensive energy education resource produced by the The California Energy Commission.

Reviewed Sites

Dante II Frame Walking Robot
This is a good site to visit to get information about an actual, functioning robot - Dante II.

The Virtual Museum of Computing
Would you like to see an excellent photo of the Manchester Mark 1, arguably the world's first programmable digital computer?

Utah Science Home Page
This resource consists of links and specially designed lessons that correlate with the Utah State science curriculum.

The edZone and the Arts.

Dance, music, theater, and the visual arts pervade contemporary culture. The edZone will help students, parents, and teachers integrate informal and formal arts education.

The edZone, 24/7, should support both artistic creation and appreciation. For both purposes, the power of the edZone to help students, teachers, and parents to organize themselves spontaneously into active audiences will significantly improve educational experience in the arts.

The edZone should provide on-line tools for graphic arts, music, video, theater and the like, as well as virtual display and performance space. The means of artistic expression can be continuously at hand making a fuller integration of the arts into educational experience more feasible.

The arts are copious, protean, and diverse; they do not thrive in a narrow scope and sequence. The edZone can reflect the full flowering of the arts; a greater diversity of talents can find opportunities for development and expression.

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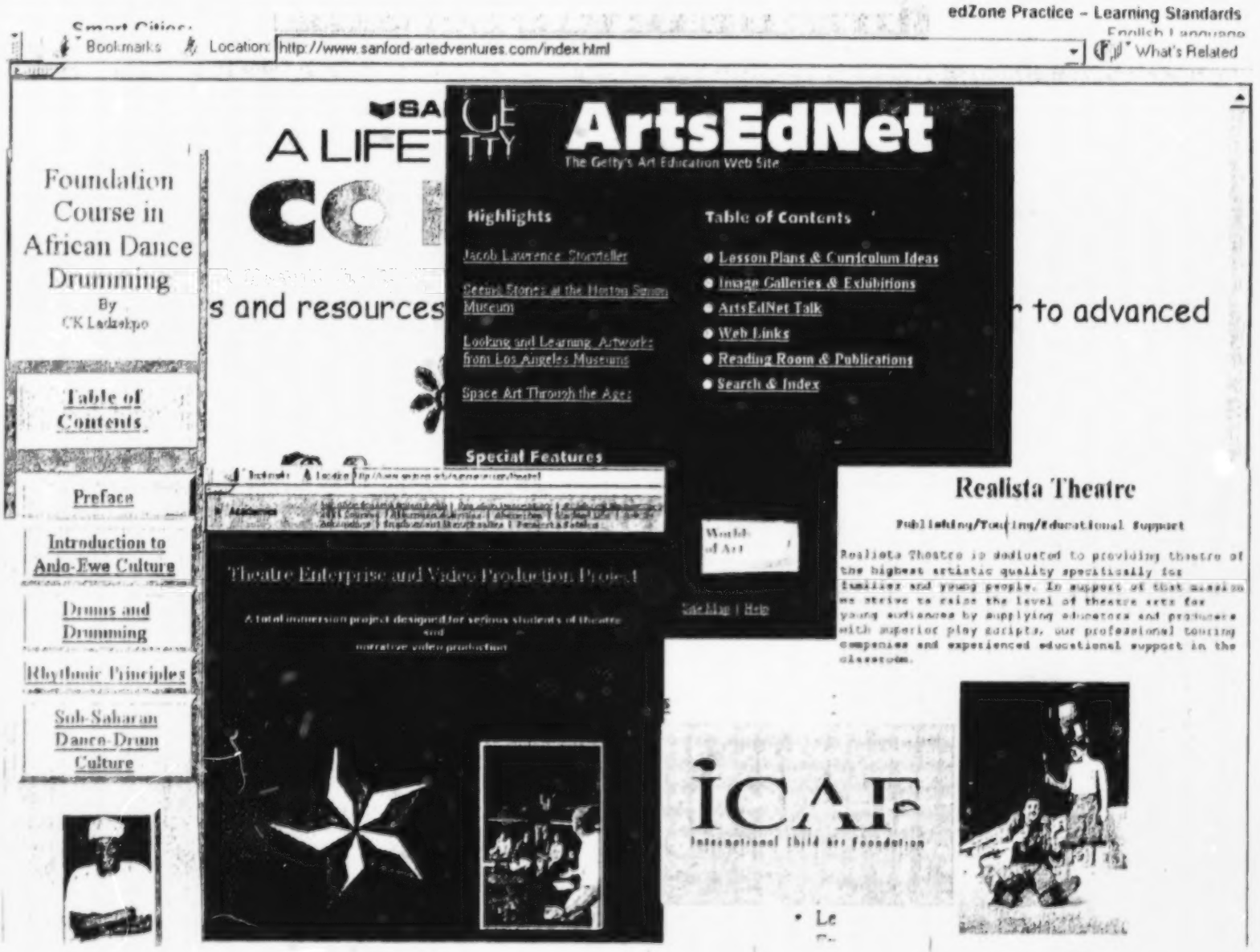
edZone Practice – Learning Standards
Bookmarks
Location: http://www.sanford-artedventures.com/index.html
What's Related
Foundation Course in African Dance Drumming
By
CK Ladzekpo
Table of Contents
Preface
Introduction to Anlo-Ewe Culture
Drums and Drumming
Rhythmic Principles
Sub-Saharan Dance-Drum Culture
ArtsEdNet
The Getty's Art Education Web Site
Highlights
Jacob Lawrence: Storyteller
Sacred Stories at the Heard Museum
Looking and Learning: Artworks from Los Angeles Museums
Space Art Through the Ages
Table of Contents
Lesson Plans & Curriculum Ideas
Image Galleries & Exhibitions
ArtsEdNet Talk
Web Links
Reading Room & Publications
Search & Index
Special Features
Theatre Enterprise and Video Production Project
Realista Theatre
Publishing/Touring/Educational Support
Realista Theatre is dedicated to providing theatre of the highest artistic quality specifically for families and young people. In support of that mission we strive to raise the level of theatre arts for young audiences by supplying educators and producers with superior play scripts, our professional touring companies and experienced educational support in the classroom.
ICAF
International Child Art Foundation

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The edZone and Languages other than English.

In the edZone the conditions for the study of languages other than English change fundamentally. It greatly expands opportunities to engage in cultural activities through other languages, to communicate by means of them, to connect with ideas and views uniquely expressed through them. The edZone is a global network in which many languages are together fully at work.

Through the edZone, students can have access to a full range of educational resources in each of the world's languages, along with the news, entertainment, criticism, and culture, making the effective integration of language study into the curriculum more more feasible.

The edZone should include tools that will facilitate multilingual collaborative projects and technical standards should ensure that work in any language will display correctly.

With the edZone, students for whom English is a second language can have a much more positive relationship to their first language within their educational experience.

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Global languages.

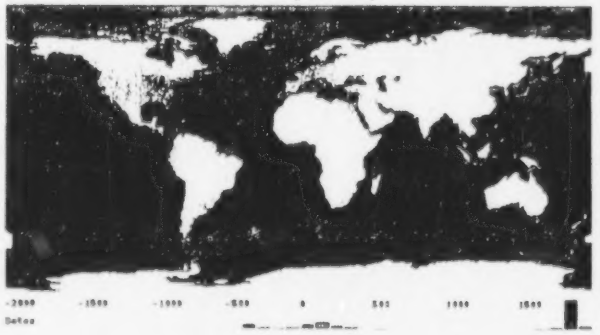
edZone Practice – Learning Standards
English Language
Social Studies
Mathematics—Science—Technology
The Arts

The Perseus Digital Library

Gregory Crane, Editor-in-Chief, Tufts University

Search

Configure Display · Help Library · Tools · Publications · Collaborations · Support Perseus



A graph of the places and dates mentioned in this collection

About Perseus

Perseus is an evolving digital library, engineering interactions through time, space, and language. Our primary goal is to bring a wide range of source materials to as large an audience as possible. We anticipate that greater accessibility to the sources for the study of the humanities will strengthen the quality of questions, lead to new avenues of research, and connect more people through the connection of

Announcements

Perseus introduces several new collections and a new look

Perseus is a non-profit enterprise, located in the Department of the Classics, Tufts University

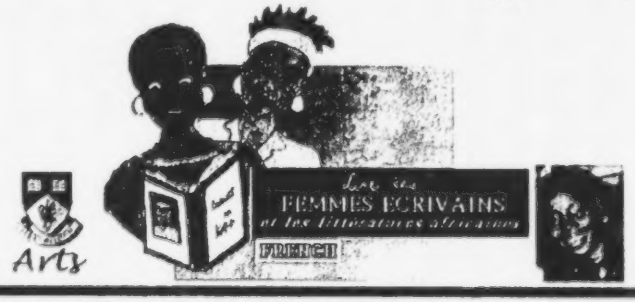
Location: http://www.geocities.com/macondomorel/index.html

Literatura latinoamericana

Un espacio de cultura para la unión de los pueblos de latinoamérica

LOS CONSAGRADOS

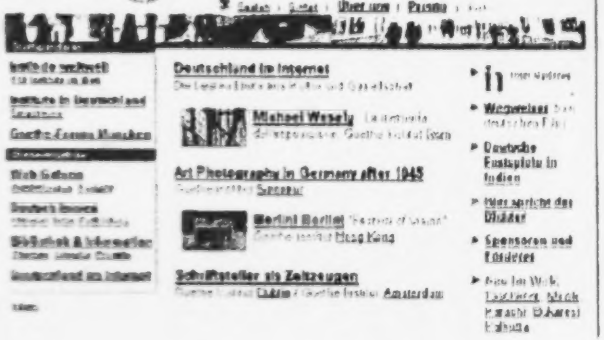
Bioy Casares · Donoso · Neruda · Benedetti · Cortázar · García Márquez · Sábato
Borges · Arlt · Fuentes · Cabrera Infante · Quiñón · Quiroga · Roa Bastos
Carpentier · Asturias · Rulfo · Vargas Llosa · Paz · Mistral



WELCOME AKWABA BIENVENUE KARIBU

dans l'univers des Belles-Lettres africaines

GOETHE INSTITUT



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The edZone and Health, Physical Education, Family & Consumer Sciences.

With traditional arrangements, the school more and more exclusively contained the educational program. As a result, as many matters related to home, family, and community became formal curricular subjects, the irony arose that these matters loose direct connection to the experiential world of the student outside of school. The edZone makes the educational program ubiquitous and continuous, putting the school, along with the home, family, and community, within it. This context will renew the linkages of health, physical education, family and consumer education, with the existential lives of students.

These are among the matters that educators in school and throughout life should present in a preeminently student-centered way. The edZone should provide tools by which students can better control the consequences of their choices for their health, physical well-being, family life, and consumer experience.

More than most other aspects of education, these matters are sensitive to class differences. Resources in the edZone should be multi-cultural, multi-ethnic, and multi-class in the principles of personal prudence that they propound.

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Resources on health & families.

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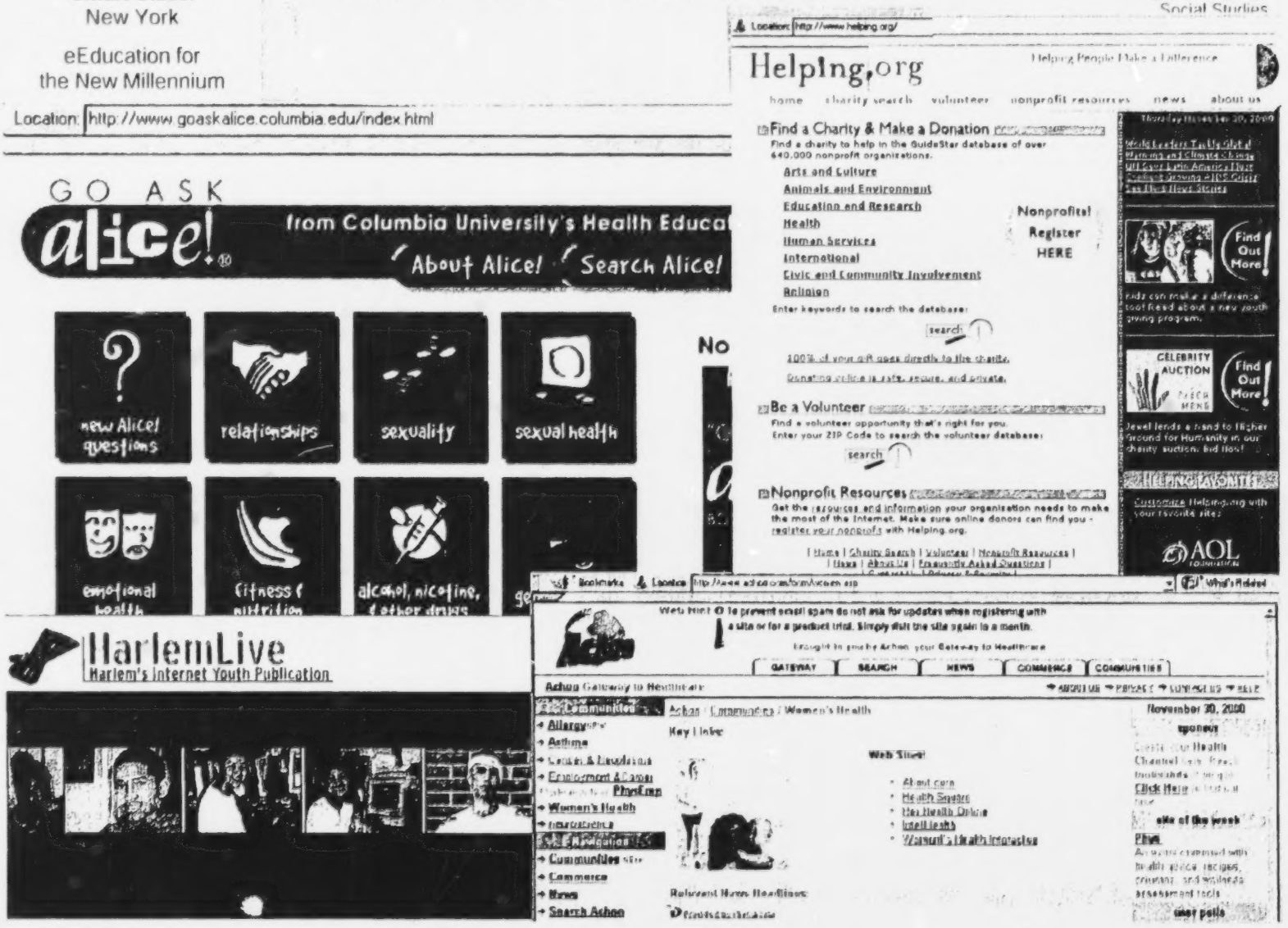
edZone Practice – Learning Standards
English Language
Social Studies



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The edZone and Career Development and Occupational Studies.

In the edZone, the world of education and the world of work more effectively overlap.

The edZone should enable students to perceive and master the background knowledge requisite for effective participation in one or another occupation. Students should understand what specific expertise they need to develop to gain entry-level employment in an occupation and how to go about acquiring it. Lastly, the edZone should facilitate their developing the learning skills needed to sustain a successful career within a chosen occupation.

Students should experience the edZone as an educational resource continuously available to them, equipping them throughout life with the capacity for on-going self-development. Global, high-tech economies require that employees be life-long learners and the ability to adapt and change is the surest form of security.

The edZone should reflect the recognition that a commitment to learning will pervade work and that leisure will become more active and productive of diverse forms of value – economic, political, cultural, and spiritual.

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Using the edZone
All Grades.

Engagement	Intelligence	Communication
The edZone provides full access to the Learning Standards and the *Resource Guides* for each subject and to digital libraries of materials correlated to its scope and sequence. It comprises clear, concise multimedia modules explaining the concepts and principles encompassed within the standards. The edZone poses the powerful, generative questions motivating the advancement of knowledge within the scope and sequence.	Across the range of the Learning Standards, the edZone provides sustained simulations, engaging participants in using the techniques of the relevant disciplines and professions to create knowledge and know-how. The edZone continuously provides tools to exercise and develop basic skills. The edZone will map a user's work relative to the scope and sequence and provide feedback about its quality relative to the learning standards.	The edZone serves as an educational communications hub, enabling – •Students to collaborate in and out of school on difficult problems. •Patterns of interaction in which older students mentor younger students in their studies. •Broad participation in contests, quests, affinity groups, and interest driven learning.

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Using the edZone
Grades K through 5

Engagement	Intelligence	Communication
The edZone provides numerous quests and exploratory challenges that engage children in the practice of search and retrieval as well as assessing the relevance and reliability of results. Students and teachers build the expectation that the school is the place where interesting questions get put and the edZone is a resource for the collaborative development of answers that will stand up to reflective examination.	At this stage, mastery of basic skills is the first priority. The edZone should situate opportunities for practice and self-correction so that each student feels the command of those skills has significance for the fulfillment of his or her purposes. Students should develop the sense that through the edZone they control powerful cultural tools, with which they can build their intellectual skills, solve problems, and create meaning. Students learn with simulations.	Students should acquire facility with the edZone as a medium of communication. Through the 3rd grade, they should progressively use the edZone for communication between their immediate group and other groups and individuals. From 4th grade, students, teachers, and parents should use collaborative tools and personal email to engage in cultural work and to facilitate interaction with others, near and far, in work and play.

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Using the edZone
Grades 6 through 8.

Engagement	Intelligence	Communication
Students should make their initial cycle through the fundamental questions that give rise to the structure of knowledge and inquiry. Students, teachers, and parents should realize that they will not "finish" a topic and then move on to the next. Questions explored lead to further questions – that is the driving force in inquiry-based learning. Novices must experience the edZone as both manageable and comprehensive. Portfolio construction.	In the edZone, the scope is comprehensive and the sequence individual. The edZone must provide students, along with their teachers, parents, and others, continuous feedback about the sequence of what each has done relative to the full scope of knowledge. Such feedback should inform each student's decisions about his or her studies and help teachers and parents be informative resources for the student as he or she considers successive choices. Simulations across subjects.	Communications patterns fostered by the edZone should embody a utilitarian calculus – the greatest responsiveness for the greatest number. Students should gain experience using different forms of interaction for different educational purposes – synchronous and asynchronous, proximate and distant, direct and mediated. Students engage the problem of separating realities from appearances fostered by each kind of communications media.

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Using the edZone
Grades 9 through 12.

Engagement	Intelligence	Communication
Students again address the basic questions, expanding the reach and depth of their engagement with the culture. Students will show more differentiation in the sophistication of their inquiries. Students engage in complex collaborations, reaching into higher education, the workplace, and public spheres. Through the edZone, students engage with the world at large, with the school as a staging ground and the portfolio the assemblage of its fruits.	Students actively use feedback capacities in the edZone as resources in individuating their interests, capacities, and accomplishments. Students use a wide range of simulations and evaluate how the virtual and the actual differ in substance and action. Students develop discrimination in their selection and application of intelligent tools within the edZone.	Students increasingly engage in communication in order to act through the edZone on matters of personal and public import. A range of norms, which derive from the traditional idea that the school is a realm separate from the rest of practical life, become subject to revaluation. Students will use communications resources to develop their public personae, a responsible sense of who they are and what they stand for within the educative community.

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Using the edZone School to College.

High Achieving Seniors	These students should find entrance to colleges of their choice easy and the transition to undergraduate work natural, having already interacted substantially with university resources and studies.
Average Achieving Seniors	Most should get into four year colleges and be ready to succeed in study there. Progression into CUNY should be natural, facilitated by extending the edZone to encompass undergraduate and graduate study.
Low Achieving Seniors	Most should easily enter two-year colleges, which, within the City, will seem much like an extension of high school with preparation for desirable jobs in the work place as a prime concern.
Seniors from Special High schools	A growing proportion of graduates may directly enter professional life confident that they can extend their education through further study on-line. The lockstep from high school to college may weaken further.
College Entrance Requirements	Colleges will re-examine their admissions processes as more students will have been interacting with their programs routinely while in school. The NYCBoE and the City's higher education community will take the lead in this re-examination.

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Using the edZone School to Work.

Employers will interact regularly with students through the edZone, facilitating the transition from school to work.

The Internet, and the edZone with it, builds fluid interconnections between diverse sectors of activity that were previously more distinct from each other. The world of work and the world of education will increasingly overlap. Students will act as participant observers in different kinds of work settings. Employers in both the public and the private sector will routinely participate in the educational experience of students.

Employers need to help imbue the learning standards with value and meaning by making high achievement with respect to the standards *a* condition of entry level employment. Employers need to take affirmative measures within the edZone to ensure that the entire workforce can continuously extend its educational attainments beyond the standards.

The edZone can attract employers in search of skilled, well-educated workers and dynamic employers have both a self-interest and a civic responsibility to make the edZone pedagogically effective.

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Pedagogical requirements.

Educators using technology to improve education, not technologists using education to improve technology.

Technological specifications – processing power, bandwidth, server capacity and through-put, etc. – should suffice to support full use of the Education Zone by all members of the City's educational community.

Providing the pedagogical requirements set by the Board to implement its educational plan should be an absolute priority that all bidders must meet in implementing the Board's technology plan.

- **Tools for students must provide them with full control over their educational activities.**
- **Tools for teachers must enable them to interact effectively with each of their students, and their parents, individually and in groups, about all aspects of a student's educational work.**
- **Tools for schools must enable the school to serve, 24/7, as a communications hub for everyone connected with it.**
- **Tools for parents must engage them in the educational life of their children and offer adult educational resources, making the school an effective center of community learning.**

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Technology scaled to student potentialities.

Students need to control high-quality content, confident that is has been peer reviewed for accuracy and relevance.

The edZone must provide students with full control over their educational activities.

- **Foremost, students need to control comprehensive, high-quality intellectual content. Development of the edZone should include effective procedures for the prompt, continuing review of contents in an effort to guarantee accuracy, currency, and completeness.**
- **Students need the most up-to-date tools for on-line collaboration and powerful applications for processing content.**
- **Students need a secure, copious storage for their work, with the ability to access it routinely, at any time from any location. Each student's work and the ability to access it should endure across his or her whole educational experience.**
- **Students need a full repertoire of stimulating, challenges – on-line apprenticeships, simulations, webquests, virtual worlds, and so on.**
- **Students need opportunities to interact with a wide variety of experts, peers, and counselors about concerns of mutual interest.**

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Technologies for teachers facilitating the work of students.

Tools for teachers must enable them to interact effectively with each of their students, and their parents, individually and in groups, about all aspects of a student's educational work.

- **Foremost, teachers need means to put powerful questions to students and to perceive easily the results of students' work, to interject suggestions and criticisms, to consult with diverse authorities – in short teachers need a full suite of tools for on-line collaboration with diverse individuals and groups.**
- **Teachers need a full set of just-in-time professional development experiences and opportunities to engage specialists as the occasion requires. In the edZone, teachers cannot be prepared for every contingency long ahead of time, but they must have the means at hand to respond knowledgeably, however the occasion warrants.**
- **The edZone will put teachers into a mentoring relationship with parents. Teachers need a repertoire of useful resources to which they can refer parents who seek help in working constructively with their children. Teachers become educators in the fullest sense.**

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Technologies to make the school a center for pedagogical communication.

As the school ceases to contain the educational program, it becomes the conductor orchestrating use of an educational program that pervades the whole life of the community. School technologies must enable it to serve, 24/7, as a communications hub for everyone engaged in educative work.

- **Foremost, the school becomes a communicative organization encompassing the classroom, the school building, the district, and the whole educational system.**
- **As a communicative organization, the school should be among the most capable and sophisticated, able to handle comprehensive records, complex information, and substantive ideas in a secure, responsive way.**
- **Sustaining progressive improvement in the quality of the edZone will entail continuously upgrading the capacity of the school to provide students, teachers, and parents with useful feedback and effective control over educational resources.**

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Technologies to enable parents to engage fully in education.

Tools for parents must engage them in the educational life of their children and offer adult educational resources, making the school an effective center of community learning.

- **Foremost, parents need to set examples as learners for their children. With the edZone, it is less important that parents help their children perform prescribed tasks and more important that they exemplify active curiosity and the urge to make use of educational opportunities. For that to occur, the edZone must provide adults with a full range of useful learning opportunities.**
- **In addition to engaging in their own educational opportunities, parents can help their children in the edZone with the logistics of learning. The edZone should track what has and has not been accomplished and provide both parent and student insight at each step into what might come next.**
- **Parents need to be able to communicate easily and regularly with all those involved in educative work with their children. They need to understand expectations and have access to all tools and resources with which their children work.**

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Pedagogical power – the key to success.

It is worth investing in technologies sufficiently powerful to ensure that the edZone serves students, teachers, parents, and the whole City well.

- **The comparative advantage in a portal sponsored by the Board of Education, relative to typical commercial portals, lies in the quality of its educational services. Users will stick with the portal and return to it regularly if they experience it as a compelling educational resource.**
- **The Board can leverage its huge scale by setting its standards and aspirations higher than smaller competitors can. The scale of participation is likely to be a function of the quality of the educational experience the edZone sustains.**
- **Open source development techniques and an open source business model should enable the creation of high quality content and powerful software tools at minimum costs.**
- **The edZone can set itself apart from alternatives through continuous, exacting peer-review of content and pedagogy.**

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Commitments

The Smart City

An achievement to which all contribute.

In a system where students are players and teachers are coaches, the whole community must join in as supporters and fans.

- **Higher Education – Knowledge in the people's service.**
- **Professions – Expertise in the service of children and youth.**
- **Government – Making intelligent connections for all.**
- **Business – Volunteering for educational excellence.**
- **Labor – Solidarity supporting the dignity of creative work.**
- **Philanthropy – Resources where they count.**
- **Religion – Cultivating value and dedication.**
- **Art – Creativity making meaning through the City.**
- **Journalism – Information serving the pursuit of possibility.**
- **New Media – Design for living and learning.**
- **Sports and Entertainment – Get smart. Get with the message.**
- **Communities – Diversity makes the City work.**
- **Leadership – Educational vision and the future of New York.**

The edZone is a work of the City as a whole.

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Education – by, for, and through the City.

The edZone transforms the conditions of teaching and learning by making high-quality educational tools and resources ubiquitous and continuous throughout the City. The school ceases to contain the educational program, as that program comes to contain the school, the home, the community, the entire City.

With this change, the educational responsibilities of the diverse components of the City become more visible and explicit. All sectors of city life participate in the work of education and become accountable for the quality of their contributions.

The question ceases to be the old, rather divisive issue – what does business, or the press, or one or another community group, think the schools should do or stop doing. The question becomes more practical and participatory – how can business, or the press, or one or another community group, work through the edZone to help the progeny of the City develop its fullest potentials?

It will take much experimentation and effort to find all the ways different groups can answer this question with effect.

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The City as Educator

Greater New York

Get in the Zone

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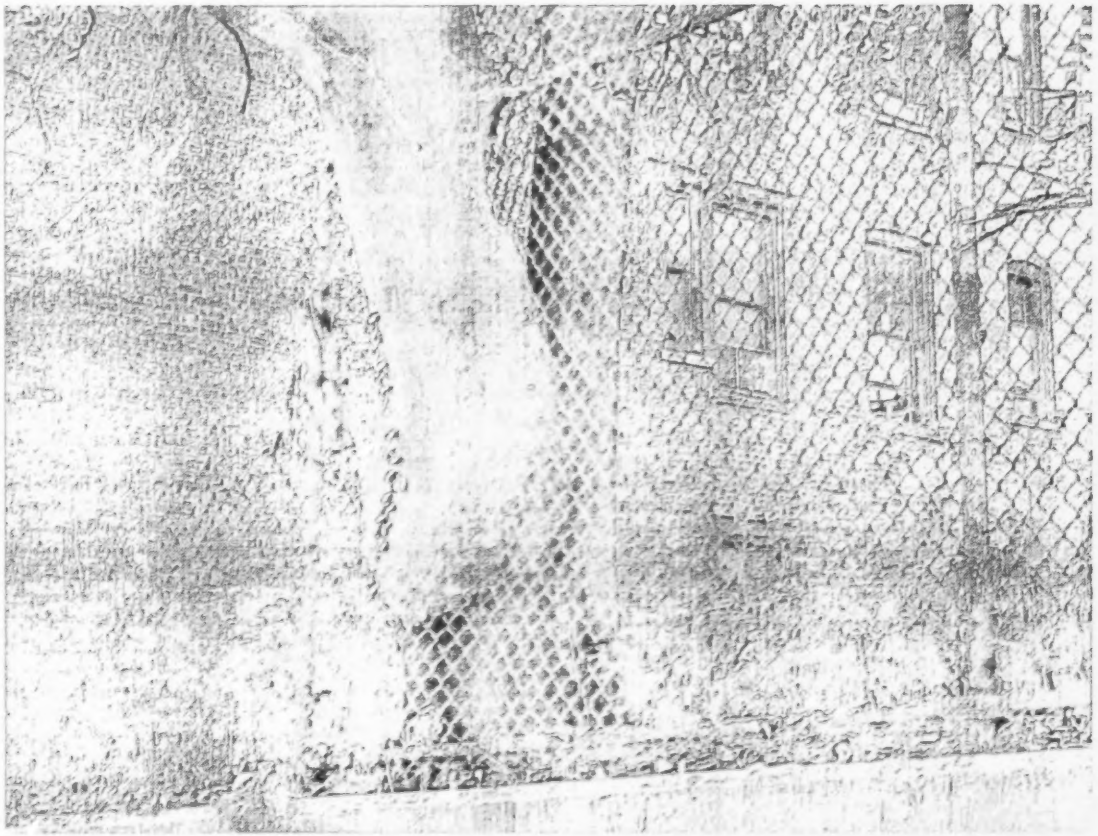
Smart Cities:
New York

eEducation for
the New Millennium

Where there is a will . . .



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